

REMARKS

The Examiner is requested to consider the replacement drawings submitted with original application in order to clarify the correlation between the reference numerals and the elements revealed in the drawings as filed. Figures 5 and 6 have been canceled from this application. Also submitted were the following remarks and a declaration under Rule 1.32.

Applicant has attempted to comply with the Examiner's requirement for restricting the claims in this case to the second designated claim grouping drawn to a transmission tube assembly classified in class 102 sub 275.1. However, Applicant respectfully traverses this restriction requirement in light of Applicant's perceived scope for this invention whereby side-by-side redundant shock transmission tubes are joined together for ease in handling, but can be readily separated in the field by the user. While Applicant's method claims have been canceled pursuant to the restriction requirement, Applicant respectfully submits that the invention disclosed herein reveals for the first time a practical way of avoiding the necessity for enclosing redundant shock tubes in a sheath, or protective extruded covering.

Applicant respectfully submits that the invention disclosed, whereby a bead of adhesive is laid between substantially the entire lengths of two shock tube signal tubes, without need of either a cover sheath, or any co extrusion such as suggested in the prior art, represents a significant advance over that prior art, and should be found non-obvious and patentable. The rules governing obviousness clearly dictate that an Applicant's disclosure not be used as a template from which to recreate the claimed invention. The Examiner's reliance upon the Ensign-Bickford, patent no. 5,365,851, appears to be misplaced in light of the facts presented in Mr. Steve Bartholomew's declaration under Rule 1.132 presented with this response.

In his declaration, Mr. Steve Bartholomew, currently a part owner of Shock Tube Systems, gives us some history on the Ensign-Bickford patent no. 5,365,851 cited by the Examiner in the subject application. Mr. Bartholomew states that a prior patent no. 5,001,981 to Ensign-Bickford, issued to the same inventor as the '851 patent cited by the Examiner (See attachment 1 to the Bartholomew declaration) should be considered as particularly relevant to the thinking of Lester Shaw and Ensign-Bickford on redundant shock tube, or "dual tube", such as that shown in the cited '851 Ensign-Bickford patent.

From personal experience, Mr. Bartholomew advises that the development of "dual tube" at Ensign-Bickford initially followed the sheath approach per the '981 patent, so as to provide an outer sheath separable from the side-by-side tubes and forming a covering for the side-by-side tubes as disclosed in the '981 Ensign-Bickford patent.

Ensign-Bickford later (at the time of filing it's application for the '851 patent) "improved" the sheath style "dual tube" of the earlier '981 patent to provide the side-by-side tubes in an extruded "sheath" similar to that disclosed in the 1959 patent no. 2,877,708 (also cited by the Examiner in the subject application).

We have the benefit of Mr. Bartholomew's opinion to the effect that he and Lester Shaw, as well as Ensign-Bickford engineers generally, never entertained the possibility of bonding side-by-side tubes, but assumed that some sort of sheath was required around these tubes, if only to protect the tubes from abrasion. As stated for example, in the '981 patent itself, the outer sheath provides a durable, environmentally impermeable covering over the transmission tubes. The sheath also cooperates with the tubes to maintain the tubes in juxtaposed relation along substantially the entire length.

The fact that the '851 patent reference, in the summary of invention paragraph calls for an axially extending line of weakening to facilitate separating the sheath so as to separate the tubes as shown in Figure 3, runs directly contrary to the teaching of the present application, whereby a readily separable adhesive bead is provided between two tubes, and the need for an outer sheath is eliminated.

Referring to paragraph 14 of the Office Action, claims 2 and 14-16 are rejected as unpatentable over the '851 Shaw patent in combination with the 1959 Rey '708 patent. From the forgoing analysis it will be apparent that any such combination would lead a person skilled in the art to provide an outer sheath around side-by-side or juxtaposed transmission tubes whether the sheath is wrapped as shown in the prior art Shaw '981 patent, or extruded as shown in the 1959 Rey '708 patent. Thus, the tubes shown in Figure 3 of the Shaw '851 patent are not "inherently bonded together" as assumed by the Examiner, but are instead formed with an extruded sheath or casing molded over the entire surface of the tubes themselves all as taught in the 1959 '708 patent to Rey.

The prior art does not show or suggest elimination of the sheath or outer casing, coupled with the concept of providing an adhesive bead between the tubes,

with the result that the tubes can be separated without any necessity for a line of weakening or other characteristics of an external sheath or casing.

It is well settled that the disclosure in one's application cannot be used as a template from which to recreate the claimed invention. An "obviousness" rejection requires some suggestion from the prior art, in one or another of the references, that all elements of the claimed invention were apparent to the person of skill in the art at that particular time. In this case, Mr. Bartholomew has shown that those of skill in the art, given the disclosure in the patent cited, and the newly cited referenced '981 patent, could not have extrapolated from Figure 3 of the '851 patent to reach the improvement defined by the claims in the current application. Only by hindsight, with the benefit of Applicant's disclosure at hand, is it possible to look at Figure 3 of the '851 patent and as the Examiner has done assume that the tubes 10 are bonded together.

The prior art generally and the cited references in particular, do not suggest that the redundant tubes be joined other than by providing a sheath or casing around the tubes, Applicant is clearly entitled to the claim as presented whereby an elongated adhesive bead is provided between the adjacent tubes along substantially the entire length of these tubes.

Dependant claims 3- 8 and 11-17 should be allowable with Claim 2.

The Examiner, at page 8 of the Office Action, concludes from the Rey 1959 patent 2,877,708 that an adhesive polymeric strip is suggested in this prior art reference. However, Applicant is unable to locate the language referred to by the Examiner and the only reference to a "strip" is at line 40 of Col. 3, where the portion of the casing, indicating at 4 in Figure 2, is said to be capable of being cut. Once again the Examiner appears to have resorted to hindsight in connection with his attempt to mold the prior art into a structure that would anticipate or render obvious the claimed combination. Rey merely shows a covering casing or sheath extruded around the side-by-side transmission tubes. This casing is molded over the entire surfaces of the tubes with the thickness of material over the tubes including a narrow "coupling strip" there between. (See claim 1 of the '708 patent).

The Examiner's reliance on Thurston 4,607,573 does not cure the defects referred to previously with reference to the combination of Rey and the Ensign-Bickford '851 patent to Shaw. Thurston merely shows a single transmission tube or fuse having juxtaposed coextensive layers provided therein. For the record, the 1959

patent no. 2,877,708 to Rey also illustrates such a transmission tube configuration. Applicant does not claim to have originated the materials from which the transmission tubes are made, or the reagent used within the tube for propagating the shock wave. Applicant's do claim invention for their unique way of joining two conventional shock tubes with abrasive outer layers, and Surlyn internal layers, eliminating the need for any outer abrasion resistant sheath or covering around these tubes.

The present invention in its broader aspects entails at least two discrete transmission tubes arranged in axially parallel and adjacent relationship, the tubes having a percussive powder composition contained within the tubes, and an elongated adhesive bead provided between the adjacent tubes along substantially the entire length thereof.

Thus, the fact that the tubes might be extruded from a synthetic polymer is significant only in the fact that the adhesive bead also comprises a polymeric adhesive material rather than being part of an abrasion resistant polymeric sheath or casing in accordance with the prior art.

The prior art generally and the cited references in particular fail to show or to suggest such a polymeric adhesive bead provided between polymeric transmission tubes.

On page 11 of the Office Action the Examiner implies that one of ordinary skill in the art would select Surlyn as a constituent material for the inner adherent layer and so thereby gain adhesion with some outer layer as per the Shaw reference, patent 5,365,851. In point of fact, Surlyn is the material of choice for the inner layer due to its excellent powder adhesion with the reactive mixture on the inner tube wall. However, Surlyn has very poor adhesion to the outer layer of a transmission tube. Usually, manufacturers provide an intermediate or third layer between the inner Surlyn layer and the outer polyethylene layer to achieve good adhesion between these layers.

On page 12 the Examiner states that it would be obvious to one of ordinary skill to select the plastic polymer, ethylene vinyl acetate, as the constituent material of the inner layer. Contrary to that assumption, such material (ethylene vinyl acetate, or EVA) would not work as the inner adherent layer.

Hopefully, these comments will assist the Examiner in reevaluating his rejection in the outstanding Office Action.

Applicant hereby submits that no new matter has been added to the application. The change to paragraph 13 of the specification is to conform the description to the claims as filed. See Claim 14.

Should the Examiner have any questions regarding the present application, Applicants respectfully request that the Examiner contact Applicants' representative at the phone number listed below in the event that the Examiner feel that it might be desirable to revise the language of the claims so as to define the invention in language of greater clarity than that presented herein. While Applicants believe no fees are due with filing this amendment, please charge any deficiencies associated with this filing to our Deposit Account No: 13-0235.

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